

WHAT IS CLAIMED IS:

- 1        1. A signal transfer point node within a Signaling System 7 (SS7) telecommunications network serving a particular local switch and further connected to a packet communications network, comprising:
  - 4            a first interface for receiving a SS7 signal from said particular local switch, said SS7 signal having a destination address within said SS7 telecommunications network;
  - 7            a first routing table for determining the routing mechanism within said SS7 telecommunications network;
  - 9            a second routing table for determining the routing mechanism within said packet communications network; and
  - 11          a processor for determining whether said destination address associated with said received SS7 signal is specified within said second routing table.
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1           2.     The signaling transfer point node of Claim 1 further comprising:  
2                   a second interface for communicating packet data with said packet  
3                   communications network; and  
4                   an interworking function module connected to said second interface for  
5                   encapsulating said SS7 signal within a packet and for transmitting said packet over  
6                   said second interface.

1           3.     The signaling transfer point node of Claim 2 wherein said interworking  
2                   function module utilizes Message Transfer Part 3 - User Adaptation Layer (M3UA)  
3                   protocol to communicate said SS7 signal over said packet communications  
4                   network.

1           4.     The signal transfer point node of Claim 1 further comprising:  
2                   a third interface for communicating said received SS7 signal over said SS7  
3                   telecommunications network; and  
4                   wherein said processor transmits said received SS7 signal over said third  
5                   interface in response to a determination that said destination address associated  
6                   with said received SS7 signal is specified within said first routing table.

1       5. The signal transfer point node of Claim 1 wherein said packet  
2       communications network further comprising:

3           an address server for maintaining address data for a plurality of  
4       communications nodes within said packet communications network;

5           a plurality of said STPs connected to said packet communications network;

6       and

7           wherein said server communicates said address data to said plurality of  
8       STPs over said packet communications network;

1       6. The signaling transfer point node of Claim 1 wherein said first routing table  
2       comprises a point code (PC) table for said destination address.

1       7. The signaling transfer point node of Claim 1 wherein said second routing  
2       table comprises an Internet Protocol (IP) address table for a particular signaling  
3       transfer point serving a destination local switch associated with said destination  
4       address.

1       8. The signaling transfer point node of Claim 1 wherein said first interface  
2       comprises a trunk interface with said local switch.

1       9. A method of communicating a SS7 signal over a packet based  
2       communications network wherein said SS7 signal is originated from a local switch  
3       connected to a SS7 telecommunications network, further comprising the steps of:  
4               receiving a SS7 signal from said local switch, said SS7 signal indicating a  
5       destination address within said SS7 telecommunications network;  
6               determining whether said destination address indicated by said received  
7       SS7 signal is specified within a routing code table indicating that said destination  
8       address is reachable by said packet based communications network;  
9               in response to said determination, routing said SS7 signal over said packet  
10      based communications network using a determined routing code as the destination  
11      address within said packet based communications network;  
12      otherwise,  
13               determining whether said destination address indicated by said received  
14      SS7 signal is specified within a point code table indicating that said destination  
15      address is reachable by said SS7 telecommunications network; and  
16               in response to said determination, routing said SS7 signal over said SS7  
17      telecommunications network.

1           10. The method of claim 9 wherein said step of determining whether said  
2           destination address is specified within said routing code table is performed by a  
3           first signal transfer point (STP) connected to said local switch.

1           11. The method of claim 10 wherein said step of routing said received SS7  
2           signal over said packet based communications network further comprises the steps  
3           of:

4                 identifying an Internet Protocol (IP) address associated with a second signal  
5           transfer point (STP) serving a destination local switch associated with said received  
6           destination address within said routing code table;

7                 encapsulating said received SS7 signal within an Internet protocol (IP)  
8           based packet; and

9                 routing said IP packet using said identified IP address associated with said  
10           second STP as the destination address over said packet based communications  
11           network.

1       12. The method of Claim 11 further comprises the step of utilizing Message  
2       Transfer Part 3 – User Adaptation Layer (M3UA) protocol to transmit said received  
3       SS7 signal over said product based communications network and to support peer-  
4       to-peer signaling.

1       13. The method of Claim 11 wherein said step of routing said received SS7  
2       signal over said SS7 telecommunications network further comprises the step of said  
3       first STP routing said received SS7 signal over said SS7 telecommunications  
4       network using said point code as the destination address.

1       14. The method of Claim 9 further comprising the steps of:  
2           receiving an address update packet signal from a centralized server; and  
3           updating said routing code table with data received within said address  
4       update packet signal.

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1        15. The method of Claim 14 wherein said SS7 telecommunications network  
2        includes a plurality of signal transfer points (STPs), each including said routing  
3        code table, wherein each of said STPs further receiving said address update packet  
4        signal from said centralized server for updating said routing code table.

1        16. A system for communicating a SS7 signal over a packet based  
2        communications network wherein said SS7 signal is originated from a local switch  
3        connected to a SS7 telecommunications network, further comprising:  
4                means for receiving a SS7 signal from said local switch, said SS7 signal  
5        indicating a destination address within said SS7 telecommunications network;  
6                means for determining whether said destination address indicated by said  
7        received SS7 signal is specified within a routing code table indicating that said  
8        destination address is reachable by said packet based communications network;  
9                in response to said determination, means for routing said SS7 signal over  
10       said packet based communications network using a determined routing code as the  
11       destination address within said packet based communications network;  
12       otherwise,  
13       means for determining whether said destination address indicated by said  
14       received SS7 signal is specified within a point code table indicating that said  
15       destination address is reachable by said SS7 telecommunications network; and  
16       in response to said determination, means for routing said SS7 signal over  
17       said SS7 telecommunications network.

1        17. The system of claim 16 wherein said means for determining whether said  
2        destination address is specified within said routing code table comprises a first  
3        signal transfer point (STP) connected to said local switch.

1        18. The system of Claim 17 wherein said means for routing said received SS7  
2        signal over said packet based communications network further comprises:  
3                means for identifying an Internet Protocol (IP) address associated with a  
4                second signal transfer point (STP) serving a destination local switch associated with  
5                said received destination address within said routing code table;  
6                means for encapsulating said received SS7 signal within an internet  
7                protocol (IP) based packet; and  
8                means for routing said IP packet using said identified IP address as the  
9                destination address over said packet based communications network.

1        19. The system of Claim 18 further comprises means for utilizing Message  
2        Transfer Part 3 – User Adaptation Layer (M3UA) protocol to transmit said received  
3        SS7 signal over said packet communications network.

1           20. The system of Claim 18 wherein said first STP further comprises means  
2           for routing said received SS7 signal over said SS7 telecommunications network  
3           using said point code as the destination address.

1           21. The system of Claim 16 further comprising:  
2           means for receiving an address update packet signal from a centralized  
3           server; and  
4           means for updating said routing code table with data received within said  
5           address update packet signal.

1           22. The system of Claim 21 herein said SS7 telecommunications network  
2           further comprising a plurality of signal transfer points (STPs), each comprising  
3           said routing code table, wherein each of said STPs further comprising means for  
4           receiving said address update packet signal from said centralized server for  
5           updating said routing code table.